PROSPECTS FOR SHIPBUILDING:
AN ONTARIO PERSPECTIVE

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Industry Sector Policy Branch
Ministry of Industry and Tourism

Office of Economic Policy
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PROSPECTS FOR SHIPBUILDING

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Summary

The Industry

. The shipbuilding industry in Canada is subject to relatively wide fluctuations in employment and output.

. Although the industry accounts for only 1.0 per cent of Canadian manufacturing, its size belies its regional importance. For example, shipbuilding accounts for 5 per cent of manufacturing employment in the Atlantic provinces.

. Coastal facilities are geared toward production for export, and as a result, the current world-wide oversupply of shipping capacity has had serious effects on these operations.

. Great Lakes facilities concentrate, but not entirely, on production and repair of lake freighters. As such, these facilities are facing strong and perhaps unfair competition from the importation of undervalued used ships which are refit for use by Canadian shippers. Alternately, the U.S. Jones Act prohibits the export of Canadian made vessels to the United States.

. The Shipbuilding Industry Assistance Program (Department of Industry Trade and Commerce) provides a 12 per cent subsidy on eligible production costs. This subsidy was temporarily raised to 20 per cent for 6 months in 1977, but it is in contrast to subsidies in other Maritime nations of up to 60 per cent.

Prospects for the Industry

. The prospects for the coastal yards are dependent on export opportunities and the outlook for the Great Lakes yards is dependent on federal government action to upgrade facilities and to guard against unfair imports, and to provide internationally competitive shipbuilding subsidies.

. Opportunities which do exist domestically include: the replacement market, icebreakers, fishery patrol vessels, seabed mining equipment, icebreaking bulk cargo ships, Canadian Navy replacement, and LNG carriers.

Ontario's Concerns

. Unless Great Lakes production and waterway facilities are upgraded to accommodate the building of the 1,000 foot freighters for use on the Upper Lakes, the continued existence of a viable Canadian shipbuilding presence in the Great Lakes will be jeopardized.

. Consideration must be given to the effects of the importation of used undervalued ships into the Great Lakes market.

. The Federal Government should be encouraged to complete its study of the Great Lakes Drydocks.

. The Federal Government should examine its purchasing, subsidy, and other support policies in light of regional economic concerns.

PROSPECTS FOR SHIPBUILDING

I. INTRODUCTION

Canada's shipbuilding industry is subject to wide fluctuations in employment and output, in part as a result of strong competition from imports from nations which subsidize the cost of production by up to 60 per cent. The current world-wide slump in the industry has had serious negative effects on the Canadian industry as a result of uncertainty. Questions, therefore have been raised about the future viability of the industry. These questions and the outlook for the industry are particularly important within the context of regional development.

The Canadian shipbuilding industry designs, constructs and repairs bulk carriers, tugs, ferries, tankers, naval vessels, ice-breakers, general purpose cargo ships, fishing vessels, oil drilling rigs and other offshore equipment. Its allied industries manufacture marine components.

Although the shipbuilding industry represents only about 1.0 per cent of total Canadian manufacturing employment, the distribution of the industry both across Canada and within each region illustrates its importance to a given region. The table below indicates the regional distribution of employment in this industry relative to employment in the manufacturing sector as a whole. For example, although Ontario accounts for 50 per cent of total manufacturing employment in Canada, only 15 per cent of employment in the shipbuilding industry is located in Ontario.

RELATIVE IMPORTANCE OF EMPLOYMENT IN THE SHIPBUILDING INDUSTRY (Per Cent) Table 1

Region	Shipbuilding	Total Manufacturing
Atlantic	25.7	4.7
Quebec	40.4	29.1
Ontario	15.4	50.2
Prairie	-	7.7
British Columbia	18.3	8.3
CANADA	100.0	100.0

Source: Statistics Canada, Employment Earnings and Hours, 72-002.

This paper will examine, in general terms, the status of the Canadian shipbuilding industry. Particular attention will be directed to the unique aspects of Ontario's share of the industry. Two important questions with regard to Ontario shipbuilding activity will be addressed: the regional importance of existing activity and the prospects for future activity.

II. The Shipbuilding Industry

The shipbuilding industry in Canada has experienced a general decline relative to total provincial manufacturing activity. The difficulties of the Collingwood Shipyards earlier this year served to exemplify the problems facing the industry in Ontario. While success of the Collingwood yards in securing a contract for a ship has reduced the immediate severity of this particular situation, more general and continuing problems persist for the national industry including:

- cyclical nature of the industry and its structural difficulties of diversification to offset cylicality;
- lack of research and development activities in material and manufacturing sciences leading to advancement in domestic technology;
- a lack of training facilities for skilled manpower relating to marine technology;
- low levels of federal assistance relative to foreign manufacturers, particularly in relation to the United States;
- the need for ships of modern design to increase productivity of Canadian Merchant Shipping Lines;
- the impact of a poor investment climate on both the purchase of new ships by the shipping industry and the shipbuilding industry;
- need for upgrading of construction facilities, in particular a drydock to accommodate the construction and/or servicing of 1,000 foot ships for use on upper Great Lakes; and
- need to increase Canadian content of shipbourne parts, engines and accessories by encouraging Canadian enterprise to manufacturing these items.

The shipbuilding industry is closely associated with the shipping industry. Historically, the transportation of energy products and raw food products, notably grain, contributed to a world-wide increase in shipping requirements. These requirements escalated by the closing of the Suez Canal, were largely met by a significant increases in the output of all world shipyards, particularly those of the United States and Japan. By 1976, however, there was a world-wide excess of shipping capacity and production has slumped.

During the 1960's and early 1970's, Canadian shipyards experienced growth which resulted from increased exports and which was further stimulated by federal policies and subsidies. Canadian yards, including those in Ontario, however, were not exempt from the most recent decline in new demand, and production and employment have declined as a result.

The Canadian industry consists of four divisions: the West Coast, the East Coast, the St. Lawrence and the Great Lakes. A significant proportion of total production in the coast facilities is destined for export or is related to repair of foreign vessels.

The present world-wide slump in shipbuilding as a result of the over supply of sea-going shipping capacity has severely depressed activity in the coastal areas. Production in the Great Lakes region is primarily for domestic consumption as this division specializes in the unique "lakers", but is prevented from export to American shipping firms by the United States "Jones Act".[1]

(i) CONSTRUCTION AND REPAIR FACILITIES

Atlantic Region:

At present, 27 establishments are involved in shipbuilding and/or shiprepairing activities in the Atlantic Region. Of these by far the most important are: Halifax Shipyards Division of Hawker Siddeley Canada, Ltd., Halifax, Nova Scotia and Saint John Shipbuilding and Drydock Co. Ltd., Saint John, New Brunswick. Total production by these two organizations has averaged $30 to $35 million annually. Of this figure , about one-third or $10 to $12 million annually comes from drydocking, repairs, refits and conversions.

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1. The Jones Act, among other regulations, prohibits the transportation of United States goods in ships not constructed in the United States.

Halifax Shipyards, a Division of Hawker Siddeley Canada Ltd., is a shipbuilding organization with drydock and repair facilities. The yard has two building berths each 360 feet by 80 feet, a floating dock and a graving dock. Until recently, although some ships were built, the organization concentrated on ship repair business. This concentration on repairs resulted in only modest modernization of plant and equipment in the yard and shops. In recent years, however, Halifax Shipyards has become the Canadian builder of giant off-shore drilling rigs and has been nearly fully occupied in this activity. Concurrent with this activity, there has been considerable improvement in facilities and equipment and in modernization of welding equipment and procedures.

Saint John Shipbuilding and Drydock Co. Ltd., located in the Port of Saint John, New Brunswick builds and repairs ships. Vessels recently delivered or under construction include 30,000 DWT (dead weight tons) product carriers for Esso Tankers, Inc. The shipyard is one of the most modern in Canada and is fully equipped and staffed to perform all types of construction, conversion and major repair work. Facilities are presently suitable for the design, construction and outfitting of ships of up to about 80,000 DWT.

West Coast Area:

At present, some twenty-three establishments in British Columbia are carrying out shipbuilding and/or shiprepairing. Most are modest in size and capability. Only Burrard Dry Dock Co. Ltd. can repair vessels of 10,000 DWT. or over in its docks. Yarrows Limited is the major repairer using the Equimalt Graving Dock for large vessels. It is estimated that the work by Burrard and Yarrows has, in the last ten year period, varied between some $14 to $40 million annually.

Burrard Drydock Co. Ltd. is the largest shipbuilding and ship-repairing establishment on Canada's West Coast. At present, it can build vessels of about 500 feet in length and can drydock vessels having similar length up to about 15,000 tons deadweight. There are two floating drydocks which are owned by Burrard and are available for exclusive full-time use in ship repair and conversion. They are not used for new ship construction.

St. Lawrence Area:

At present nine establishments are carrying on shipbuilding and/or shiprepairing activity on the St. Lawrence River. Of these by far the most prominent, and in fact, the only organizations applicable to this report are: Canadian Vickers Ltd., Montreal, Marine Industries Lts., Sorel and Davie Shipbuilding Ltd., Lauzon.

Vessels to which these establishments look for repair business are:

. Great Lakes vessels engaged in trade between the Great Lakes and Quebec City, Baie Comeau, Sept. Isles or Havre St. Pierre;

. Great Lakes vessels engaged in the transport of titanium ore from Havre St. Pierre to Contrecouer, some 130 miles above Quebec City and 30 miles below Montreal;

. Canadian flag vessels engaged in the coastal trade, passing through the Port of Quebec or operating in the Lower St. Lawrence;

. Cross river ferries;

. Ministry of Transport ice breakers, survey and supply vessels, etc. and other Government vessels operating in the general vicinity;

. Naval repairs and refits;

. Ocean going vessels operating to the Port of Quebec; and

. Ocean going vessels operating through the Port of Quebec.

Until very recently, Canadian Vickers was one of Canada's leading shipbuilding establishments but it now confines its activities to ship conversion and repair and to heavy engineering. As a result, Canadian Vickers has first class repair facilities and unrivalled engineering support facilities, together with the vast experienced manpower pool of the Montreal District.

Major activities of Marine Industries Limited are shipbuilding and heavy engineering, but Marine Industries is also actively engaged in ship repairs. Marine Industries has no graving or floating drydocks and activity is restricted to the capacity of the two marine railways, the largest of which can accommodate vessels not exceeding 520 feet in length, 78 feet in beam or 5,500 tons docking weight. Marine Industries Limited is one of Canada's major shipbuilders with six shipbuilding berths capable of building vessels up to some 500 feet in length.

Davie Shipbuilding Limited is the largest shipbuilding and ship repairing establishment in Canada; in the past 20 years, more than 30 per cent of Canada's shipbuilding activity has taken place here. The plant is fully equipped for the construction and repair of vessels of every type and size, up to the limitations of the Port of Quebec for floating repairs, and of the Champlain Dock for drydocking repairs.

The Great Lakes:

There are three shipyards in Ontario capable of building vessels up to 730', the kind used in carrying major commodities on the Great Lakes and through the St. Lawrence Seaway. The shipyards are located at Collingwood, Thunder Bay and Port Weller. The Collingwood and Thunder Bay yards are both owned by Canada Steamships Limited with the Thunder Bay yards specializing in ship maintenance and repair activities. The

Port Weller yard is owned by Upper Lakes Shipping. The construction of one large vessel of the kind used on the Great Lake is normally completed in a two-year period and accounts for a large share of both companies' business activity and employment.

ii. PRODUCTION

The Canadian shipbuilding industry has experienced varied growth since 1961. Table 2 illustrates that the number of production workers has declined since the peak in 1966, and value of shipments, despite a downturn from 1966 to 1970, has shown renewed strength since 1971. The most recent year for which complete data are available is 1975. Partial data indicate that production continued to increase in 1976 as a result of rising export markets. Since late 1976, however, a significant downturn in employment and production has occurred. As a result, the rate of federal subsidy was temporarily increased until October 31, 1977.

SHIPBUILDING AND REPAIR IN CANADA, 1961-1975 — Table 2

Year	Number of Establish-ments	Total Production Workers	Total Wages	Value of Manufacturing Shipments	Manufacturing Value Added
			($000)	($000)	($000)
1961	63	12,113	50,245	138,129	88,168
1962	62	14,532	67,407	172,496	105,332
1963	64	14,835	71,372	208,590	121,455
1964	65	13,970	69,907	234,393	136,322
1965	71	15,276	79,230	274,601	155,128
1966	72	16,239	89,660	293,828	165,842
1967	74	15,403	88,321	286,259	153,731
1968	68	12,270	78,905	264,321	150,688
1969	65	12,264	87,056	259,997	144,823
1970	62	11,113	82,503	232,705	132,881
1971	59	11,122	86,924	259,580	152,123
1972	54	12,800	106,683	331,801	178,937
1973	57	13,164	122,371	362,796	198,957
1974	58	12,664	137,282	468,711	240,257
1975	58	14,253	176,824	572,733	297,700

Source: Statistics Canada, Census of Manufacturing.

(iii) EMPLOYMENT

Recent data are available for employment and average earnings. Tables 3, 4 and 5 illustrate the relative share of employment in the industry accounted for by each region, and the relative importance of the industry within each region's manufacturing sector.

The employment levels within the industry tend to fluctuate to a significant degree. This characteristic is similar to the conditions in the construction industry. The reason for this is the nature of the product, particularly with regard to the shipbuilding sector of the industry rather than the repair sector. Table 3 illustrates this fluctuation which is common to all regions. The fluctuations tend to result in high turnover rates. As a result, training and retraining is often a costly and a recurring necessity.

REGIONAL DISTRIBUTION OF TOTAL EMPLOYMENT IN THE CANADIAN SHIPBUILDING INDUSTRY MAY 1971 TO MAY 1977 — Table 3

Year	Atlantic	Quebec	Ontario	British Columbia	Canada
1971	3,500	6,200	1,500	2,200	13,400
1972	4,300	7,300	2,500	2,000	16,000
1973	4,400	2,700	2,200	3,200	12,500
1974	4,100	4,700	2,000	3,400	14,200
1975	5,000	5,500	2,400	3,500	16,400
1976	4,600	6,300	2,300	3,500	16,700
1977	3,500	5,500	2,100	2,500	13,600

Source: Statistics Canada, Employment Earnings and Hours.

The regional distribution of employment in the shipbuilding industry as illustrated in Table 4 is distinctly different from the regional distribution of total manufacturing employment across Canada. The most dramatic difference is that Ontario's share is the smallest

of the 4 regions with a shipbuilding industry. The Prairie region has no shipbuilding activity as defined by the Census of Manufactures. On the other hand, employment in the Atlantic Region and Quebec, together, constitutes about two-thirds of the Canadian total in the industry.

REGIONAL DISTRIBUTION OF EMPLOYMENT
IN THE SHIPBUILDING INDUSTRY
(Per Cent) Table 4

Year	Atlantic	Quebec	Ontario	British Columbia	Canada
1971	26.1	46.3	11.2	16.4	100.0
1972	26.9	45.6	15.6	12.5	100.0
1973	35.2	21.6	17.6	25.6	100.0
1974	28.7	33.1	14.1	24.6	100.0
1975	30.4	33.5	14.6	21.3	100.0
1976	23.9	35.9	13.7	20.9	100.0
1977	25.7	40.4	15.4	18.3	100.0

Source: Statistics Canada.

In the final analysis, however, the shipbuilding industry accounts for a relatively minute proportion of total Canadian manufacturing. As table 5 illustrates, even in the Atlantic region, the shipbuilding industry only accounts for about 5 per cent of total manufacturing employment.

SHIPBUILDING'S SHARE OF MANUFACTURING EMPLOYMENT (per cent) Table 5

Year	Atlantic	Quebec	Ontario	British Columbia	Canada
1971	4.7	1.3	0.2	1.9	0.8
1972	5.7	1.6	0.3	1.6	1.0
1973	5.5	.6	0.3	2.5	1.0
1974	4.9	1.0	0.2	2.5	0.9
1975	6.2	1.2	0.3	2.8	1.0
1976	5.7	1.3	0.3	2.7	1.1
1977	4.9	1.2	0.3	2.0	1.0

Source: Statistics Canada, Employment Earnings and Hours.

(iv) TRADE

The pattern of Canadian trade in ships and related goods is closely tied to both national and international conditions which affect the shipbuilding industry, including foreign subsidies, regulations and relative international economic conditions. Overall, the balance of trade in ships, boats and related goods exhibit a high degree of fluctuation as a result of the relatively high unit value of the finished product. This feature impacts more heavily on exports; imports, being concentrated in marine components, engines and engine parts, have a much smaller unit value.

The data presented in Table 6 illustrate the relatively higher intrusion of imports into the Ontario market and the deterioration in the balance of trade in 1976 coincident with the world wide slump in shipbuilding.

TRADE IN SHIPS, BOATS AND RELATED COMMODITIES BY REGION*, 1971-1976

Table 6

	Atlantic Region ($000)	Quebec ($000)	Ontario ($000)	Prairie Region ($000)	British Columbia ($000)	Total Canada ($000)
Imports						
1971	7,611	9,278	35,404	1,560	13,506	67,360
1972	12,553	26,286	48,319	2,238	22,748	112,146
1973	13,925	24,867	58,002	3,505	30,127	130,426
1974	29,663	25,761	76,160	6,186	59,966	197,735
1975	34,078	32,604	79,760	7,349	53,511	207,302
1976	20,804	35,468	93,595	13,262	37,614	200,742
Exports						
1971	3,586	8,637	17,785	171	5,833	36,011
1972	14,332	7,356	32,038	175	4,709	58,611
1973	53,506	65,312	38,858	195	21,590	179,463
1974	42,309	60,961	32,858	1,787	10,796	148,441
1975	73,013	110,994	44,259	365	18,759	247,388
1976	5,795	116,974	40,725	788	25,748	190,029
Balance of Trade						
1971	-4,025	-641	-17,619	-1,389	-7,673	-31,349
1972	+1,779	-18,930	-16,281	-2,063	-18,039	-53,535
1973	+39,581	+40,445	-19,144	-3,310	-1,184	+49,037
1974	+12,646	+35,200	-43,302	-4,399	-49,170	-49,294
1975	+38,935	+78,390	-42,889	-6,984	-34,752	+40,086
1976	-15,009	+81,506	-52,870	-12,474	-11,866	-10,713

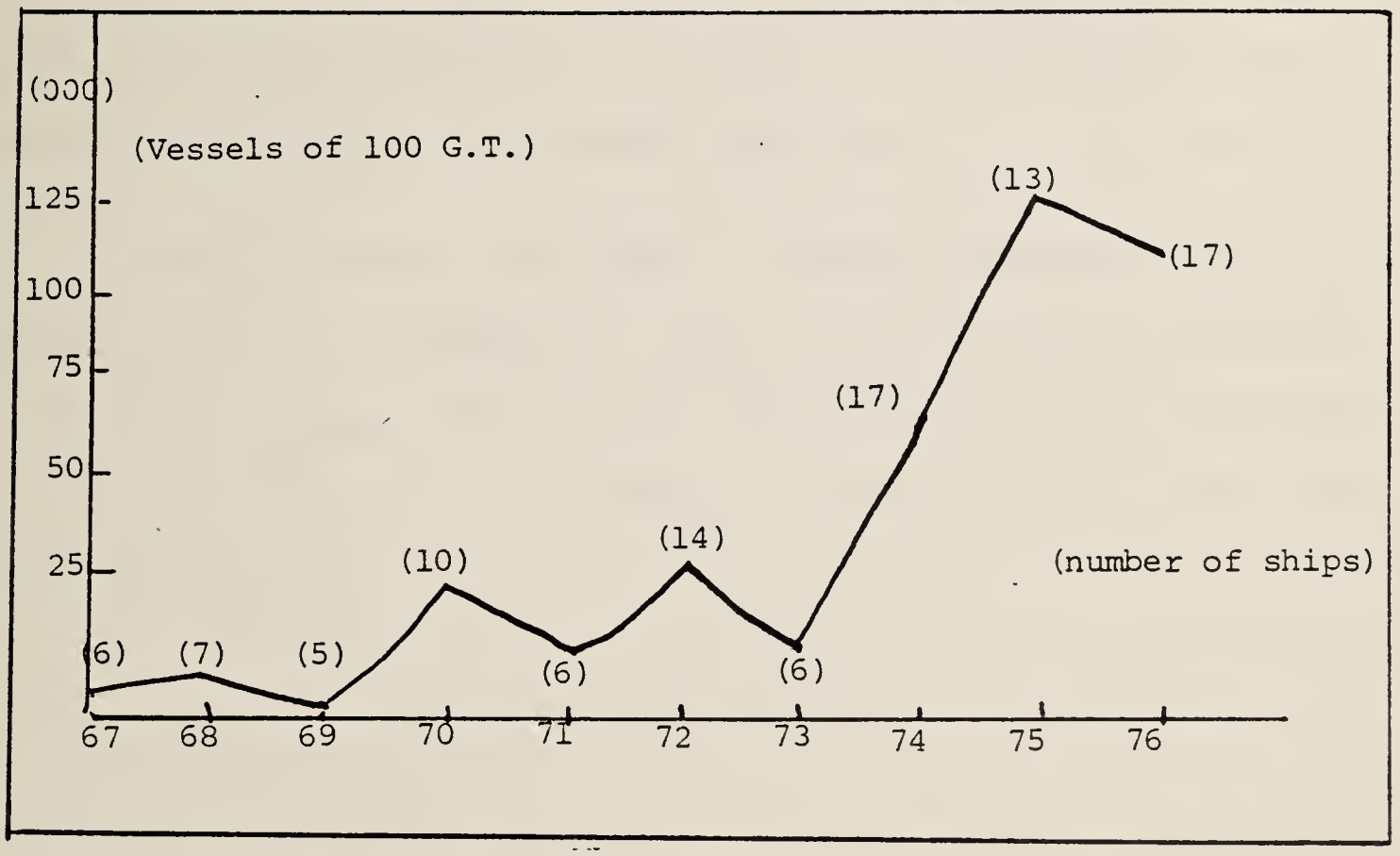
Source: Statistics Canada.

*Regional breakdown of trade data relative to origin or destination by lading.

The coastal production facilities as well as the St. Lawrence area facilities are geared more toward the export market. As a result, dampened international demand has seriously affected production requirements which in turn has had a negative impact on employment in these yards. Imports to these regions consist primarily of marine components, engines and engine parts which are used in new construction, much of which is destined for export.

Imports to Ontario have steadily grown from 1971 to 1976 and have usually constituted just less than one-half of total Canadian imports. One reason for this is the high propensity for Canadian shippers on the Great Lakes to import used vessels and refit them for use domestically. Often these vessels have fallen below standards in the exporting country (e.g., the United States) and are significantly undervalued for tariff purposes. The chart below illustrates the escalating trend in the import of used ships. Only Canadian totals are available.

IMPORTS OF USED VESSELS TO CANADA , 1967-1976 Chart 1



Source: Department of Transport

According to the Canadian Shipbuilding and Ship Repair Association (CSSRA), the price of these second hand vessels has dropped sharply. As a result, the CSSRA has called for a temporary ban on

the importation of ships for Canadian registry for coastal and internal operation and an examination of the effects of the tariffs and particularly the valuation rule. Currently, the valuation rule allows for the importation of used vessels at valuations for duty below the market value of the vessels in Canada.

The United States shipbuilding industry like that of many other Maritime national is protected by a very strong non-tarriff trade barrier, i.e., the Jones Act which fundamentally prohibits the use of foreign made vessels for coastal trade in the United States. Ostensibly, the Jones Act is for military purposes, but it has very positive benefits for the industry which employs more than 170,000 people and produces almost $6 billion of output. To compensate for a growing difference between foreign and U.S. costs, the maximum Construction Differential Subsidy (CDS) rate was raised from 35 to 50 per cent.

No such protection is afforded the Canadian industry, nor is the level of subsidy so significant. Protection by the tariff mechanism is also questionable. The following table indicates that a significant proportion of imports in this category are marine engines, engine parts or accessories.

IMPORTS BY COMMODITY GROUPS, 1971-1976
($ 000)

Table 7

	1971	1972	1973	1974	1975	1976
Ships & Boats	14,997	24,839	36,320	74,587	65,367	57,655
Marine Engines & Parts	39,860	63,053	69,323	91,940	104,637	109,104
Repair	14	75	116	340	332	728
Anchors, Parts & Accessories	12,490	24,177	26,718	30,870	36,960	33,105
Total	67,360	112,146	132,477	197,736	207,302	200,592

Source: Statistics Canada

Under present tariff arrangements, commodities which are unavailable in Canada can be imported duty free. The structure of the shipbuilding industry in Canada is such that engines, parts and accessories are not produced domestically. Instead, imported goods of this nature are used in the construction of the finished good or used in repair activity. The combination of the present tariff arrangements and the high propensity to import is such that a significant proportion of total imports are allowed in duty free. Table 8 indicates that the bulk of these engines, parts and accessories are partially or totally exempt for tariff protection.

Generally, the tariff has done little to develop the industry. The major shipbuilding establishments, i.e., those in the coastal and the St. Lawrence areas, are in the export business and need little

protection. The current world-wide slump in shipbuilding is affecting those industries, but the tariff mechanism is virtually meaningless to the firms in question.

TARIFFS ON SHIPS, BOATS AND RELATED GOODS — Table 8

Group	Stated Tariff	Calculated Tariff
Ships & Boats		
1961	15.7	13.2
1966	18.7	16.9
1971	22.5	11.4
1972	24.5	20.9
1973	23.3	3.5
1974	24.7	20.1
1975	23.7	5.0
1976	18.6	16.1
Engines & Engine Parts		
1961	20.1	5.9
1966	20.4	1.4
1971	14.9	0.8
1972	14.8	1.1
1973	32.5	9.9
1974	24.9	1.1
1975	25.8	3.2
1976	14.2	
Parts, Accessories & Repair		
1961	17.6	10.1
1966	19.7	3.5
1971	16.7	3.4
1972	15.8	3.0
1973	15.8	2.7
1974	16.7	4.3
1975	16.6	3.9
1976	14.7	1.8

Source: Stated Tariff = $\frac{\text{duty collected}}{\text{dutiable goods}}$; Calculated tariff = $\frac{\text{duty collected}}{\text{total imports}}$

Derived from Statistics Canada data.

(v) GOVERNMENT ASSISTANCE TO THE INDUSTRY

At present, government assistance to the industry is provided through two subsidy programs. The first is the Shipbuilding Construction and Ship Repair Assistance Program. Upon its inception in 1961, the rate of subsidy represented 40 per cent of the cost per ship. In 1966, the rate was reduced to 25 per cent. By 1972, it had dropped to 17 per cent and was to be reduced by 1 per cent per year thereafter until it reached 8 per cent by 1981.

As a result of the significant downturn in the industry in 1976-77, the Federal Government announced a temporary increase in the rate of subsidy from 12 to 20 per cent effective April through August 1977. In August, the increase was extended to October 31, 1977. The government, however, does not expect that the increase in the subsidy rate to 20 per cent will require additional expenditure because of the projected decline in production. Table 9 following indicates the regional distribution of these grants.

In Ontario, this program provided, from 1961 to 1975, $85 million of the capital cost in excess of $300 million for the forty lake ships that the program has involved. About 85 per cent of this construction took place between 1961 and 1968, but some over-building occurred. In contrast, $28 million has been provided since 1969, and this represents only 12 per cent of the Canadian total.

REGIONAL DISTRIBUTION OF INDUSTRIAL ASSISTANCE IN CANADA 1969-1976 — Table 9

Region	SCSR & STAP 000	SCSR & STAP %	ITC/Industrial Assistance 000	ITC/Industrial Assistance %
Atlantic	72,336	31.5	80,314	8.8
Quebec	70,984	30.9	295,636	32.3
Ontario	28,324	12.3	415,902	45.3
Prairie	4,023	1.8	30,965	3.4
British Columbia	54,021	23.5	95,188	10.4
Total	229,498	100.0	918,004	100.0

*Ship Construction and Repair Subsidies, included in Industry, Trade and Commerce Totals.

Source: Statistics Canada, Department of Industry, Trade and Commerce.

The second program is the Shipbuilding Temporary Assistance Program (STAP) which provides a subsidy of 17 per cent on vessels for exports. Export sales have also benefited by Export Development Corporation financing. The relatively small share that Ontario exports represents of total Canadian exports means that little assistance under either the STAP or the EDC is received in Ontario.

The level of assistance given to the Canadian shipbuilding industry is less than that offered to its industry by other maritime nations. As discussed earlier, the United States offers a significant amount of subsidization to its industry for reasons of national security resulting in subsequent employment and production-related economic benefits. The basis of the Maritime Administration's (MarAd)

Construction Differential Subsidy (CDS) program rests on the difference between the foreign and domestic cost of building vessels. With domestic labour[1] and material costs increasing, and intense overseas competition pushing foreign prices downward, there is generally more than a thirty-five per cent difference between United States and foreign shipbuilding costs. To compensate for this growing difference the subsidy was raised from 35 to 50 per cent for negotiated contracts.

Similar subsidies are in place in Korea and Japan; in European maritime nations, other government initiatives are in operation to maintain employment and production levels.

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1. U.S. labour costs, based on hourly wage rate data, are comparable to the Canadian average, but higher than the Ontario average.

III. THE SIGNIFICANCE OF THE SHIPBUILDING INDUSTRY IN ONTARIO: A REGIONAL PERSPECTIVE

From 1961 to 1974, the Ontario shipbuilding and repair industry experienced fluctuations in employment and output in a climate of overall decline, particularly in recent years to 1974. As Table 10 shows, employment in 1974 increased marginally from the level in 1961, but reached much higher levels in the intervening years. Although output and value-added rose substantially during the period, declines were recorded particularly from 1972-1974. The decline in employment became particularly dramatic in March, 1977, when 1,000 Collingwood Shipyard employees, or 65 per cent of total Ontario shipyard employment, faced possible closure of production facilities and imminent unemployment. In April, however, Algoma Central Railway, a major shipping company on the Great Lakes ordered a new vessel postponing closure of the yard.

ONTARIO SHIPBUILDING & REPAIR ACTIVITY
1961-1975

Table 10

Year	Total Number of Establish-ments	Total Number of Production & Related Workers	Total Production Wages	Value of Manufacture Shipments $000's	Manufactured Value Added $000's
1961	12	1,612	6,582	21,255	10,502
1962	12	1,664	7,053	20,691	10,020
1963	11	1,934	8,774	33,293	17,727
1964	12	2,205	10,167	37,837	19,401
1965	13	2,082	10,798	36,391	19,352
1966	13	1,994	10,526	34,405	18,616
1967	13	2,105	11,808	39,944	21,718
1968	12	1,798	10,981	43,582	25,243
1969	11	1,411	9,755	25,612	15,766
1970	11	1,386	9,916	30,076	16,289
1971	11	1,408	10,716	34,326	19,583
1972	11	2,092	17,174	59,367	34,804
1973	11	1,762	15,624	57,169	29,299
1974	11	1,668	16,610	54,709	29,016
1975	11	1,980	21,598	86,914	53,548

Source: Statistics Canada.

The opening of the St. Lawrence Seaway and the subsidy policy established by the federal government gave Ontario's shipbuilding industry a significant boost during the 1960's. The effect of these policies, however, was not consistent during this period and, in fact, led to some over-construction.

At this time, ships of modern design are needed to replace some of the present equipment which is not competitive. It is the industry's belief that Ontario should have a much stronger base directed toward all types of marine vessels. The development of any new yards, or the expansion of present facilities to accommodate 1,000 foot vessel construction depends upon the availability of capital for such an enterprise as well as the support of an adequate technological base, the existence of suitable markets and the availability of skilled personnel.

At present, the technological base of the industry is weak. One reason for this is that in comparison with public support of research and development in air and ground transportation modes, the effort devoted to marine technology, and in particular to shipbuilding, has been minimal. In addition to poor efforts in research and development, there are no training facilities or training programs for naval architects, marine engineers, naval draughtsmen and skilled yard tradesmen. As a result, the high skilled labour component traditionally has been imported from Europe. The Government of British Columbia, however, recently announced the establishment of Canada's first school of naval architecture offering courses in naval architecture and marine design engineering.

Although the shipbuilding industry accounts for less than one per cent of output and employment in Ontario's manufacturing sector, a regional breakdown of the industry indicates its importance. Over 80 per cent of the employment in the industry is located in Central Ontario. The Collingwood Shipyards and the Port Weller shipyards account for a substantial share of employment in Central Ontario. The other region where shipbuilding plays a significant role is Northwestern Ontario. The importance of this activity to Thunder Bay and the Collingwood area in particular, evokes concern for the industry in the context of regional economic development priorities.

(i) Collingwood

Collingwood is located in the South Georgian Bay area of Ontario (refer to Map 1). Here, the industries providing the major employment are electrical products, metal fabricating, transportation equipment, non-metallic minerals and textiles. These groups account for over 60 per cent of the manufacturing labour force. As illustrated in Table 11, with the exception of transportation equipment, these groups have had a proportionate increase in employment over the preceding 15 years until 1973. Transportation equipment, a group with proportionately large employment, has had a relative decline until 1975. More recently, it has undergone a further decline as indicated in Table 12 following.

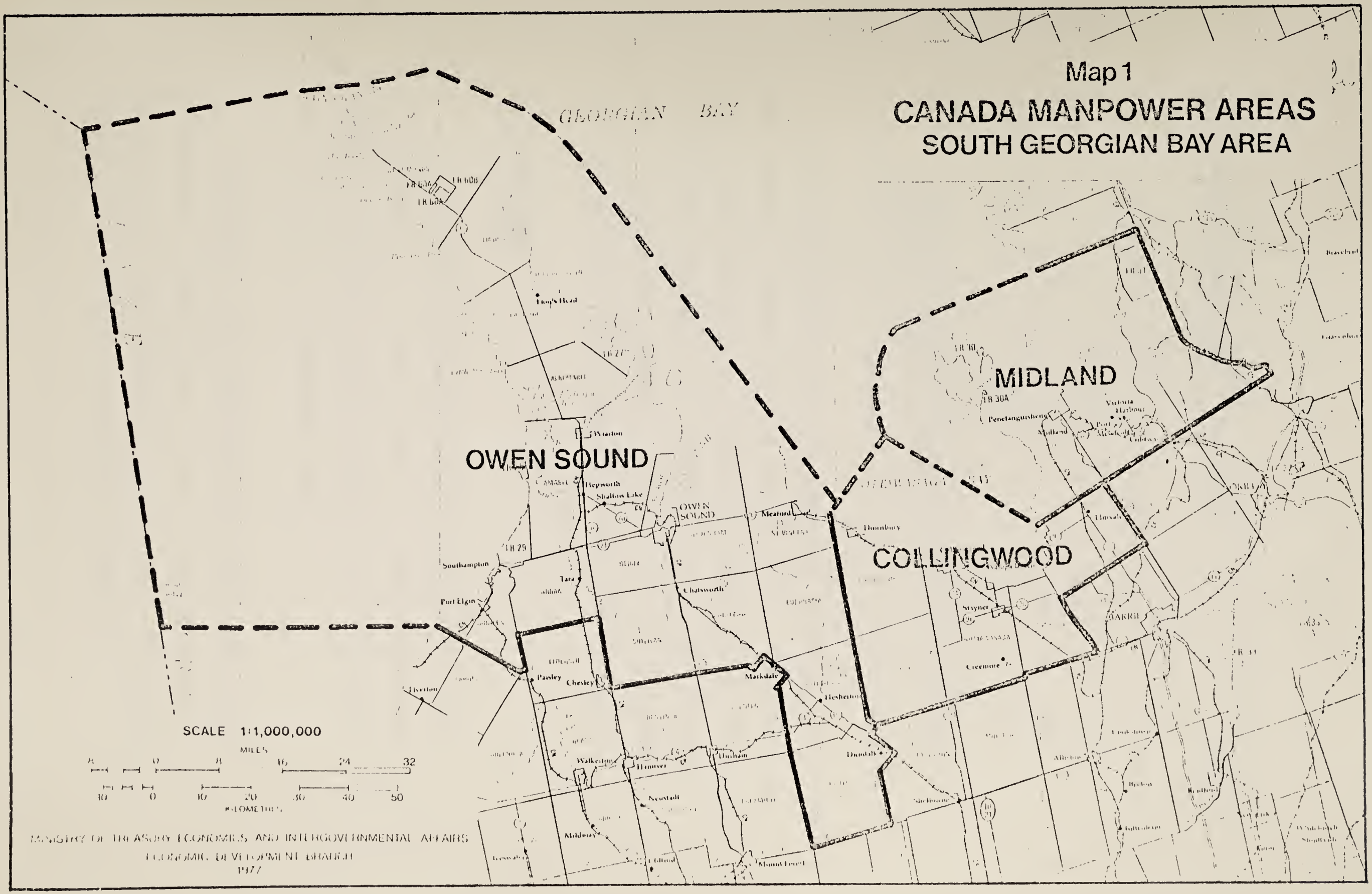
Manufacturing Employment in the South Georgian Bay Area 1961-1975 Table 11

Major Industry Groups (%)	1961	1969	1973	1975
Electrical Products	4	10	16	12
Metal Fabricating	6	8	12	13
Transportation Equipment	12	11	10	13
Non-Metallic Minerals	2	8	8	10
Textiles	4	10	10	9
	28	47	56	57

Source: South Georgian Bay Area; Manufacturing Equipment Study, Spring 1977, TEIGA

Map 1

CANADA MANPOWER AREAS
SOUTH GEORGIAN BAY AREA



MINISTRY OF TREASURY ECONOMICS AND INTERGOVERNMENTAL AFFAIRS
ECONOMIC DEVELOPMENT BRANCH
1977

SIGNIFICANCE OF SHIPBUILDING TO COLLINGWOOD — Table 12

Year	Manufacturing	Shipbuilding	%
1973	3,390	845	24.9
1974	3,390	950	28.0
1975	2,954	850	28.0
1976	3,153	965	30.6
1977 *	n/a	675	

Source: Industrial Surveys of Ontario Municipalities: 1973-1976, Ministry of Industry and Tourism.
* April 1977

In the spring of this year, the absence of a contract for the shipyards brought the threat of closure close to reality. As of April 29, 1977, the total work-force at the Collingwood Shipyards was 678 persons. The successful acquisition of a contract to build a Laker for Algoma Central has temporarily removed the immediate pressure for possible closure of the yards, but the longer term outlook is not clear.

(ii) Thunder Bay

Port Arthur Shipbuilding Company, a Division of Canada Steamship Company, is located in the City of Thunder Bay on Lake Superior. Thunder Bay supports a population of 111,476 and is the largest centre in Northwestern Ontario.

Employment in the shipbuilding and repair sector of the manufacturing economy occupies a fairly constant percentage of the total labour force employed in manufacturing in Thunder Bay although there are cyclical fluctuations. However, as

table 13 illustrates, it represents a small part of the total. Consequently, the manufacturing economy in Thunder Bay is not as dependent on shipbuilding and repair as Collingwood, but much more than Ontario's averages would indicate.

SHIPBUILDING'S SHARE OF TOTAL MANUFACTURING IN THUNDER BAY, 1973-1977 — Table 13

	Manufacturing	Shipbuilding and Repair	Shipbuilding Employment's Share of Total Manufacturing (%)
1973	9,025	310	3.4
1974	9,398	310	3.3
1975	10,204	408	4.0
1976	9,850	375	3.8
1977	10,093	260	2.6

Source: Industrial Survey of Ontario Municipalities: 1973-1977, Ministry of Industry and Tourism.

In summary, the size of Thunder Bay and its role as the major centre in Northwestern Ontario allows for greater diversification in the manufacturing economy and consequently less dependence on a single industry. However, the importance of this port as a gateway to the west should not be underestimated.

IV. PROSPECTS FOR THE INDUSTRY

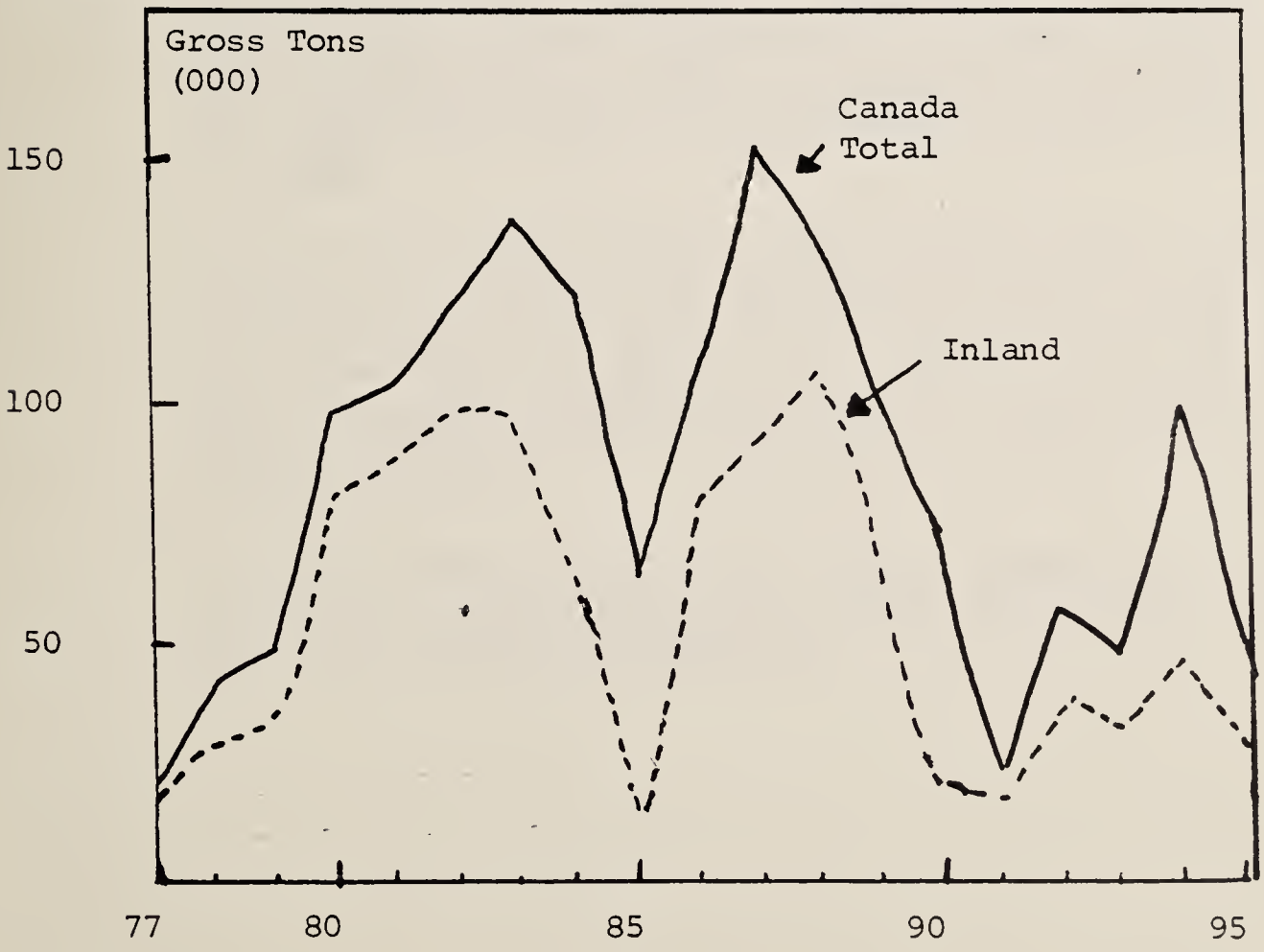
(i) Canada

The prospects for the coastal and St. Lawrence shipyards are highly dependent upon export conditions. No attempt will be made at this time to analyze the prospects for future exports, although the devaluation of the Canadian dollar may make Canadian export goods more competitive in the international market.

Despite a depressed world shipbuilding market, Canadian shipyards have a number of opportunities during the next decade. A major demand will be the result of the replacement market. The chart below indicates the potential replacement market.

POTENTIAL MERCHANT FLEET REPLACEMENT
(VESSELS OF 100 GT)

Chart 2



Source: Canadian Transport Commission

Success in filling these orders domestically will be dependent in part on the aggressiveness of the industry in securing contracts, in part on the federal government purchasing policies and in part on government encouragement of the industry.

In addition to the replacement market, there are also numerous new markets developing which will provide substantial opportunities for Canadian shipyards. These markets include:

- Large Icebreakers - Vessels of up to 40,000 tons and 100,000 S.H.P.;
- Fishery Patrol Vessels - The extensions of Canada's territorial waters to a 200 mile limit will require additional vessels for patrol purposes;
- Seabed Mining - With the development of the required technology for seabed mining over the next few years, new specialized mining and support vessels will be required;
- Icebreaking Bulk Cargo Ships - These will be used to extend the shipping season in inland waters (possibly to a 12 month basis), and for use in Northern waters. The new Arctic class vessel now under construction by Port Weller Dry Docks is the forerunner of this kind of vessel;
- Canadian Navy Replacements - Many of the existing vessels currently in service with the Canadian Navy are obsolescent or will become so in the next few years. The Canadian Government will, therefore, have to embark upon a major ship replacement program in the 1980's. Planning is already underway and the total cost is likely to exceed $3 billion; and
- Liquified Natural Gas Carriers (LNG) - These vessels will be used to transport natural gas from the far Arctic. They may have icebreaking capability.

The transportation of arctic gas by means of liquified natural gas (LNG) tankers has been given serious consideration by a consortium comprised of members from both the public and private sectors. Initial feasibility studies have been completed and show encouraging results from an economic perspective. Further studies including cost estimates (e.g. market demand for the LNG) as well as consideration of the results of this winter's northern drilling and possibly the next, however, are deemed necessary before a decision can be made.

Such a plan would require the construction of the world's first fleet of Arctic class LNG tankers, which would be the most expensive ships in the world. The ships would be the first carriers built to operate in ice covered and ice-frequented waters and would necessitate specially-strengthened bows and other equipment designed for Arctic activity. A liquified natural gas tanker with special ice breaking features is estimated to cost in excess of $200 million. One plan evisioned at a conference on "Natural Gas From the Arctic by Marine Mode", last February would involve eleven ships with expected carrying capacity of 175,000 cubic metres of LNG each. This size is 40% larger than the average LNG carriers and the fleet would cost between $2.5 and $3 billion dollars.

The building and financing of an LNG fleet would in all probability have a healthy impact on the Canadian economy and in particular that of the Atlantic provinces. As well as providing a major boost to the economies of the Atlantic provinces, it would also help to strengthen Canada's presence in the Arctic and provide eastern Canada with a source of natural gas independant of the west.

According to a study done by the University of New Brunswick,[1] an Arctic LNG tanker estimated to cost between $200 - $300 million would take approximately 2 years to build. The construction of one tanker would employ an estimated 2,000 workers with an income of between $130 and $195 million.

Canada's present shipyards are well below the size required to build an LNG tanker. The largest shipyard in Canada is presently located in Quebec, but yards twice this size would be necessary to facilitate the construction of the LNG tankers. Since new facilities would be required and they would almost without doubt be built in the Atlantic provinces, there have been suggestions to expand the Saint John drydock to accommodate Arctic class LNG carriers. Of the total components, only 10-15 per cent can be provided locally. Components such as the plate for the hull, the alloys for the tanks, the engines, the complex control systems and navigational instruments would all have to be imported, either from Central and Western Canada or other countries. If the majority of components were secured in Canada, the impact on the other provinces especially that of Quebec and Ontario would probably be quite substantial. For example, Ontario already has the capacity to build the deck assemblies.

The direct effect of the LNG plan on Ontario's shipbuilding industry is very hard to measure at this time. But it is very unlikely that the Ontario shipyards would be involved in the direct construction

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1. Financial Times of Canada, "The Super-Ships: A Plan to Carry Arctic Gas" - February 28, 1977.

of the LNG tankers. Although the effect of the LNG plan on the Ontario economy is, at this point, hard to quantify, positive effects will be felt in the shipbuilding and related industry as well as in other Ontario industries; specifically, the Iron and Steel Mills Industry. A large quantity of iron and steel would be required for the building of the LNG tankers. A likely supplier of the steel would be Ontario's steel industry.

Another possible effect of the LNG plan on the Ontario shipbuilding industry is that the displaced activity from expanded shipyards in the construction of LNG carriers in the Atlantic Provinces may be redirected to yards in Ontario and Quebec.

(ii) Ontario

In many ways the fortunes of the shipbuilding industry in Ontario are closely tied to Great Lakes shipping activity. Based on a review of trends in agricultural and industrial activity, shipping on the St. Lawrence Seaway and the Upper Great Lakes can be expected to increase at a moderate pace to 1990.

The St. Lawrence Seaway Authority forecasts that the cargo handled on the Seaway will increase at the rate of 2.5 per cent per annum to 1990. Thus, cargo on the Seaway would increase from 77.1 million tons in 1974 to 114.9 million tons in 1990, a net gain of 37.8 million tons. While this forecast may be somewhat optimistic, it has been applied to the shipping activities of the Dominion Marine Association (DMA) to derive estimates of the number of additional ships required. Table 14 indicates that there will be significant

additions to the Canadian Fleet up to 1990. While these ships (excluding ships longer than 730 feet which are captive on the Upper Great Lakes) can be supplied from shipbuilders in Ontario, elsewhere in Canada or abroad, Ontario shipbuilders should be able to obtain a sufficient share of the new orders to sustain the industry at moderate levels of activity.

FORECASTS OF ADDITIONAL SHIPS REQUIRED FOR THE CANADIAN FLEET ON THE GREAT LAKES-ST. LAWRENCE SEAWAY, 1974-1990 — Table 14

Year	Number of Ships: Size of Total Fleet "A"	Size of Total Fleet "B"	Additional Ships Required "A"	Additional Ships Required "B"
1974	50	50	-	-
1980	60	72	10	22
1985	74	93	14	21
1990	87	115	13	22

Notes:

. Forecast A assumes that all existing 63 ships in the fleet of 113 continue in operation to 1990 and carry traditional loads.

. Forecast B assumes that the 63 ships of less than 15,000 tons will be phased out over 15 years.

. The forecasts are based on the St. Lawrence Seaway Authority's expected 2.5 per cent annual growth rate and fleet and average tonnage characteristics of the Dominion Marine Association.

. It is assumed that no new ships of less than 15,000 tons are added to the fleet.

Using Table 13 as a starting point for evaluation, the prospects for shipbuilding in Ontario may be further assessed as follows:

. A review of the coal and iron ore requirements for Ontario Hydro and Ontario's steel industry indicates that about 6 additional vessels will be needed by 1985.

. Since more than 35 per cent of the Great Lakes fleet is presently older than 20 years, and since about 35 per cent of DMA tonnage is carried by vessels of less than 15,000 tons, the continuing process of replacing the older and smaller vessels represents a sizeable potential market for Ontario shipbuilders. The replacement of vessels in the existing fleet will be assisted by a desire to substitute "self-unloaders" for conventional bulk freighters. The present ratio of self-unloaders to bulkers is 1:4 so there is considerable potential in this regard.

. The age and increasing size of the Great Lakes fleet indicates a growing market for repair and maintenance work.

. Ontario shipyards may be able to obtain a share of Federal Government spending on naval and other vessels. The development of crude oil and natural gas reserves in frontier regions may create a significant market for the shipbuilding industry, especially if liquified natural gas tankers are used in the Eastern Arctic.

. Depending on the level of federal subsidies, Ontario shipbuilders may face improved international markets simultaneous to the general recovery from the present world-wide slump.

. Compared to other modes of transportation, shipping is relatively energy efficient. This should have a positive influence on the shipbuilding industry.

The economic recovery of the shipbuilding industry throughout the world and the expected growth in commodity shipments on the Great Lakes should provide sufficient market opportunities for the Collingwood yards to remain in operation. However, there remains considerable uncertainty over the long term on the question of the ability of the yards to compete with imports of used and new vessels. In most industries, the comparative costs of labour and materials are instrumental in determining international competitiveness. However, in shipbuilding, government subsidies, tariff and non-tariff barriers (e.g., preferential procurement policies) are much more significant than the comparative labour and material costs. Thus, while the variety of economic forces listed above indicate the longer term viability of shipbuilding at Collingwood, government policies will continue to have the single most pervasive effect on shipbuilding in Collingwood and other yards in Canada.

The most significant development in shipping and shipbuilding on the upper Great Lakes in recent years has been the enlargement of the Poe Lock at Sault Ste. Marie to accommodate 1000' ships and

the subsequent renovation of three American shipyards to take advantage of this development. Prior to this, the maximum seaway size was 730'. The Welland Canal will yet only accommodate vessels up to 730', and so 1000' ships are captive to the upper Great Lakes.

A 1000' vessel carries twice the cargo of a 730' with about the same crew and only marginally increased fuel consumption. Both companies engaged in shipbuilding in Ontario are interested in constructing 1000' drydocks for the construction and repair of such vessels.

Expansion of the dry dock at Collingwood will cost about $12 million and take about 15 months to complete. It would involve some $5 million in material costs and 400,000 man hours (150 men at 8 hours per day, 22 days per month). Sizeable subsidies would be necessary to expand the yards, although the cost of enlargement is less than that of a new freighter.

The volume of coal and iron ore shipments to the steel and power complex at Nanticoke on Lake Erie will be sufficiently large to support the use of 1000' vessels. (Since most of the grain from Thunder Bay is shipped through the Seaway, 1000' vessels could not be used for this purpose.) The dock facilities of Stelco and Ontario Hydro at Nanticoke can accommodate 1000' ships but additional dredging would be required. Conveying and stacking systems at Hydro's facilities may have to be modified to deal with the larger cargoes. Additional dredging (particularly at Thunder Bay) and other changes in facilities would be required at the ports of origin of shipments to Hydro and Stelco. Thus, while the volume of shipments is sufficiently large, the expansion is also closely related to the possibilities and costs of additional dredging and the modification of port facilities.

With respect to the incentive of cost reductions through the use of 1000' ships, it is clear that the use of the larger vessels will yield reductions in operating costs. Economies of scale in the construction of larger vessels will also yield lower capital costs on a per unit basis. It is not surprising that both Ontario Hydro and Stelco are interested in examining the use of larger vessels to service their operations at Nanticoke. However, as mentioned earlier, additional dredging and the modification of port facilities are necessary and are dependent upon Federal government policies. The Federal government has only recently initiated a study of the adequacy of shipbuilding and repair facilities on the Great Lakes as well as the need for a 1000' drydock.

An underlying factor in support of building 1000' drydock facilities in Canada is the forward action by the American ship-building companies. Unless competitive facilities are established on the Canadian side of the Upper Lakes, the Canadian shipping interests will be forced to buy 1000' ships to compete with American shippers. As well, Canadian owners of 1000' vessels would have to use American repair facilities.

The American Great Lake shipbuilding industry is a very small portion of the American Shipbuilding and Repair Industry which includes more than 400 establishments employing 170,600 workers. Nevertheless, the Great Lakes sector is at its highest level since World War II. The resurgence is centred mainly in two shipyards. At the end of 1975, Bay Shipbuilding Corporation, Sturgeon Bay, Wisconsin had under construction or on order, six large Great Lakes ore carriers,

four of which were 1000'. The American Shipbuilding Company, Lorain, Ohio, is building three 1000' bulk carriers. Additional orders for large self-unloading bulk carriers for service on the Great Lakes are anticipated by these yards. Other American shipyards on the Great Lakes include Fraser Shipyards Inc. on Howards Bay, Wisconsin, American Shipbuilding, Defoe Shipbuilding Company and American Shipbuilding Co. at Toledo.

SUMMARY OF UNITED STATES SHIPBUILDING CAPACITY ON THE GREAT LAKES — Table 15

Company	Maximum Ship Size
American Shipbuilding - Lorain (3 Basins)	700' x 75' 705' x 78' 1,021' x 121'
American Shipbuilding - Toledo (2 Basins)	529' x 68' 634' x 78'
Bay Shipbuilding Corp. (3 Basins)	1,146' x 136' 750' x 105' 600' x 80'
Defoe (1 Basin)	900' x 92'
Fraser Shipyards (1 Basin)	825' x 76'

Source: Report on Survey of U.S. Shipbuilding and Repair Facilities.

* Maximum Seaway Size - 730' x 78'.

V. CONCLUSIONS AND RECOMMENDATIONS

The shipbuilding industry is not a mainstay of the Canadian economy. There are, however, strong regional implications which must be considered in the analysis of the prospects for this industry. On a national basis, the strong concentration of activity in Quebec and the Atlantic provinces provides those regions, and particularly Halifax and Saint John with an important source of manufacturing employment. Within Ontario, although shipbuilding represents a very small portion of manufacturing employment and output, the strong dependence of the South Georgian Bay Area and the relative dependence of the Thunder Bay Region accounts for its importance in Ontario.

The scope for Ontario Government action with regard to providing an environment for stable growth in the shipbuilding industry lies primarily in the realm of federal provincial consultation. By virtue of the federal government's jurisdiction over ports and harbours, its historical role in the provision of dry dock services, and its responsibility for international trade, many of the mechanisms which could be used to stimulate the Ontario shipbuilding industry rest in federal hands. For this reason, and in light of the policy review process currently underway with regard to these issues, there are several areas where Ontario might want to make its position known to the federal government.

Ontario's Trade Position

Imports of vessels, particularly used and undervalued vessels, are much higher into Ontario. At the same time, the national industry is export-oriented and is less dependent upon protection. Therefore, Ontario's major concern with regard to trade of ships within the context of the

current GATT negotiations is the issue of fairer trade. There may be scope for examining the level of protection afforded the industry with a view to developing more specific and more meaningful protection for those sectors of the industry who are not export oriented and must compete with foreign firms which receive a significant protection in the form of preferential procurement policies and generous subsidy arrangements.

Restrictions on the import of used, undervalued vessels from the United States or elsewhere or bilateral agreement with the country in question might help maintain the industry in Ontario.

The Development of Facilities

The enlargement of the Poe lock at Sault Ste. Marie created a demand for 1000' ships on the Great Lakes. United States Shipbuilding companies quickly moved to take advantage of the new market and expanded their drydock and construction facilities accordingly. Unless Canadian-side establishments can upgrade their facilities accordingly, the new market will be lost, and future conditions may be such that any Canadian capacity on the Upper Lakes is meaningless.

The federal government currently is studying the adequacy of drydock facilities on the Great Lakes, following major studies of coastal facilities. It would be in Ontario's interest, particularly as regards to development in Collingwood to make its views known.

Ontario's Share of the Federal Market

The federal government purchases a substantial number of vessels. Few if any of these have been produced in Ontario in recent years. The potential interest in the LNG project and the magnitude of the requirements which will be placed on the Atlantic facilities should an LNG fleet be built, could provide some spin-offs to Ontario.

In addition to the LNG project there is a need to have the federal government clarify its procurement policies and implement them with a view toward the stabilization of the industry.

In summary areas in which the Ontario government should make its position known to the Federal Government include:

. the restrictions (tariff and non-tariff) on the importation of under-valued used ships in the interests of fairer trade, particularly vis-a-vis the United States in face of the U.S. Jones Act;

. the continuation of federal subsidies to shipbuilders and/or the federal funding of the expansion of ship-building and repair facilities on the Upper Great Lakes, e.g. (the Department of Industry Trade and Commerce's study of the adequacy of dry dock facilities on the Great Lakes);

. federal intentions regarding policies for the purchase of military vessels, ice-breakers, ferries, coast guard vessels, LNG tankers and the role of the Ontario ship yards; and

. required harbour dredging and port expansion to handle larger vessels in the Great Lakes.

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Prospects for shipbuilding.